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EXAMINER	
AZARIAN, SEYED H	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/829,407	RAGSDALE, CHARLES W.	
	Examiner	Art Unit	
	Seyed Azarian	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-45* is/are allowed.

6)☒ Claim(s) *1,2,10-15,16,17,19,46-49,50- 52* is/are rejected.

7)☐ Claim(s) *3-9,18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, 10-15, 17, 19, 46-49 and 51-52, are rejected under 35 U.S.C. 102(e) as being anticipated by Gulati (U.S. patent 6,671,625).

Regarding claim 1, Gulati discloses a method of measuring a response to a stimulus of a plurality of samples spots of a sample using a measuring system having a measurement range to generate an image of the sample in digital space, the method comprising (see abstract, generating a digitized image of biological sample, also column 29, lines 26-33, refer to biological sample and stimulus pattern associated with a set of known mutations and comparing);

while measuring the response, varying the stimulus to include at least one stimulus value where the measured response corresponds to a value in an intermediate portion of the measuring range (column 15, lines 25-60, measuring and range value);

storing a value of the measured response that corresponds to a value in the intermediate portion of the measurement range, and the stimulus value that produced

that value of the measured response (column 26, lines 23-43, sample being analyzed and store).

Regarding claim 2, Gulati discloses the method of claim 1, and further comprising dividing each stored value of the measured response by the corresponding stimulus value to provide a normalized-response value (see claim 1, also column 26, lines 23-43, sample being analyzed and store).

Regarding claim 10, Gulati discloses the method of claim 1, wherein a variation of the measured responses over the plurality of samples exceeds the measurement range (column 4, line 50 through column 5, line6, analyzing the biological sample and achieved predetermined degree (range) of convergence).

Regarding claim 11, Gulati discloses the method of claim 1, wherein varying the stimulus includes increasing the stimulus over a range (see claim 1, also column 7, lines 1-26).

Regarding claim 12, Gulati discloses the method of claim 11, wherein increasing the stimulus includes increasing the intensity of laser radiation (Fig. 1, step 108, column 3, lines 27-50 value of fluorescent intensity, also column 14, lines 8-19, different intensity).

Regarding claim 13, Gulati discloses the method of claim 1, wherein for multiple ones of the pluralities of sample spots, the value in the intermediate portion of the measurement range is

approximately the same value (Fig. 1, column 3, lines 3-26, refer to sample that match and lengths ranging).

Regarding claim 14, Gulati discloses the method of claim 1 wherein; the samples spots are regions having probes hybridized with targets having fluorescent tags (column 5, line 63 through column 6, line 15, fluorescence labeling (tag) and hybridization);

the stimulus is visible or UV optical radiation; and the response is a level of fluorescent emission (see claim 1, also column 26, lines 15-19, spectrogram).

Regarding claim 15, Gulati discloses the method of claim 14, wherein the stimulus is laser radiation (column 3, lines 27-49, step 108 microarray is illuminated under fluorescent light generated using argon laser).

Regarding claim 17, Gulati discloses a method of acquiring image-response values for an extended sample subjected to a stimulus to generate an image in digital space that includes the image-response values, the method comprising, for each of a plurality of spots, subjecting the sample to a plurality of stimulus values in a single scan of the spots, measuring corresponding response values, determining a stimulus value that provides a response value within a

desired range (see claims 1 and 10, also column 3, lines 27-49, refer to scanning).

Regarding claim 19, Gulati discloses the method of claim 17, wherein the desired range is an intermediate range of an A/D converter having a particular number of bits that accommodates a particular range of response values, and at least one of the image-response values has a number bits that exceeds the particular number of bits of the A/D converter (column 13, line 57 through column 14, line 39, digitizing).

Regarding claim 46, Gulati discloses a method for generating an image of a sample that includes a plurality of spots irradiated with stimulus radiation, such that

response radiation from each spot is a response to the stimulus radiation, the method comprising, for each spot, in a single scan of the sample, varying an intensity value of the stimulus radiation within a discrete

range of values (see claim 1, also column 7, lines 10-26, discrete microarray, and column 15, lines 51-54).

Regarding claim 52, Gulati discloses the method of claim 46, further comprising digitally operating on the image with a mathematical function (column 6, lines 47-67).

With regard to claims 47, 48, 49 and 51 the arguments analogous to those presented above for claims 1, 2, 15 and 19 are respectively applicable to claims 47, 48, 49 and 52.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 16 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gulati (U.S. patent 6,671,625) in view of Eisfeld et al (U.S. patent 6,804,385).

However regarding claim 16, Gulati does not explicitly disclose it corresponding "stimulus is electromagnetic radiation". On the other hand Eisfeld teaches (see Abstract, focusing electromagnetic radiation to a focal volume within the specimen, and

positioning the particle of interest within the focal volume, also column 7, lines 13-26, electromagnetic radiation).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Gulati invention according to the teaching of Eisfeld because combination of Gulati and Eisfeld provides detecting distinguishing feature relative to other partials of the specimen, which can easily be implemented in biological detecting device.

Regarding claim 50, Gulati does not explicitly disclose it corresponding "radiation is backscattered radiation". On the other hand Eisfeld teaches (column 11, lines 35-55, appropriate optical filters can be chosen to selectively pass, reflect (backscattered) or block radiation based on wavelength).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Gulati invention that uses fluorescence to achieve the analysis and exploit fluorescence, according to the teaching of Gulati because combination of Gulati and Eisfeld provides calculation for density of the sample based upon the selected gamma radiation count within predetermined portion of the energy spectrum for better accuracy.

Allowable Subject Matter

Claims 3-9 and 18 are allowable subject matter.

Claims 3 and 18*** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REASONS FOR ALLOWANCE

5. The following is an examiner's statement of reasons for allowance.

Claims 20-45 are allowable.

The instant invention generally relates to imaging samples and more particularly relates to image samples having a response range that exceeds the measurement range of an imaging

system.

Claim 20, representing claim 34, the closest prior art of record (Gulati and Eisfeld) references do not disclose or suggest, among other things, "**storing a radiation value for the radiation, and a corresponding intensity value for that radiation value, wherein the radiation value is below a saturation level of a detector, and dividing the stored radiation value by the stored intensity value to generate a normalized-radiation value, and multiplying the normalized-radiation values by a highest radiation value that is stored**".

These key features in combination with the other features of the claimed invention are neither taught nor suggested by (Gulati and Eisfeld) prior art of record.

Other prior art cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(U.S. patent 6,872,560) Yue et al is cited for human hydrolytic enzymes.

(U.S. patent 6,727,066) Kaser is cited for genes expressed in trated human C3A liver cell cultures.

(U.S. patent 6,607,888) Schwartz et al is cited for method for analyzing nucleic acid reactions.

(U.S. patent 6,920,397) Gulati is cited for reapeatable software-based active signal processing technique.

(U.S. patent 6,489,159) Chenchik et al is cited for polymeric arrays and methods for their use in binding assays.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu, can be reached at (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.
Status information about the PAIR system, see http:// pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian
Patent Examiner
Group Art Unit 2624
March 27, 2006

Seyed Azarian